

BEGONIA OF ECUADOR

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This revision is preliminary to a detailed manuscript for "Flora of Ecuador" edited by Gunnar Harling and Benkt Sparre. It enables us to place a number of new species on early record and to lay a framework for further study as more herbaria are consulted. So far we have studied in any depth only the herbaria of AA, AAU, GB, GH, NY, S, and US.

Our key is frankly artificial because the distinctions of placental form are highly impractical due to a lack of both pistillate flowers and fruit in a very large proportion of the specimens examined. For a taxonomic key to the sections see Irmscher in Pflanzenfam. ed. 2. 21: 579-580. 1925.

1. Flowering plant leafless.
2. Inflorescence small, few-flowered, irregular; apical stipules imbricate. 33. B. parcifolia
2. Inflorescence large, many-flowered, regularly dichotomous.
  3. Cortex yellow-brown, sublustrous, finely striate or rugulose when dry; stem tough, woody, ca. 3 dm long; capsule-wings subequal. 34. B. compacticaulis
  3. Cortex bluish gray, lustrous, smooth but crustose; stem soft, hollow, to 4 m long; capsule-wings very unequal. 35. B. erythrocarpa
1. Flowering plant leafy.
4. Blades peltate.
  5. The blades subentire to doubly dentate but not lobed.
    6. Blades strongly asymmetric, oblique, doubly dentate; leaves fasciculate at the end of the short stem. 36. B. asympeltata
    6. Blades symmetric or nearly so.
      7. The blades broadly ovate or elliptic to suborbicular, 8-24 cm wide, nearly as wide as long; leaves fasciculate; stem short. 37. B. serotina
      7. The blades ovate, much longer than wide; plant caulescent, mostly scandent.
        8. Umbo close to the broadly truncate blade-base; blade to 24 cm long, 7-11 cm wide; stamens few; largest capsule-wing falciform, ascending. 7. B. aeranthos
        8. Umbo about equidistant from the rounded base and sides of the blade or the blade subcordate at base.
    9. Stamens free or on a low torus.
    10. Inflorescence dichotomously branched.
      11. Blade-base more or less indented; margins crenate-dentate; stamens numerous, clavate. 9. B. ynesiae
      11. Blade-base broadly rounded; margins subentire.

12. Cortex gray, friable.  
 13. Filaments slender, longer than the elliptic anthers. 10. B. pululahuana  
 13. Filaments short or lacking; stamens clavate. 11. B. tropaeolifolia  
 12. Cortex reddish, persistent; stamens clavate; filaments short to almost lacking. 12. B. sodiroi  
 10. Inflorescence unbranched, not more than 3-flowered.  
 14. Peduncles solitary, axillary.  
 15. Outer staminate tepals 14-15 mm long; stamens numerous; cortex gray, crustose. 13. B. hitchcockii  
 15. Outer staminate tepals not over 6 mm long; stamens few.  
 16. Blades subentire, bicolorous. 14. B. truncicola  
 16. Blades coarsely dentate, concolorous. 15. B. segregata  
 14. Peduncles several and secund from leafless branches; stamens few. 17. B. dodsonii  
 9. Stamens on a long column, numerous; outer staminate tepals 8-20 mm long.  
 17. Blades coarsely dentate; cortex reddish brown; outer staminate tepals dentate. 18. B. maurandiae  
 17. Blades subentire; cortex gray, crustose; outer staminate tepals entire. 19. B. geminiflora  
 5. The blades strongly lobed, digitate-nerved; stem stout, erect. 35. B. erythrocarpa  
 4. Blades basifixed.  
 18. The blades strongly lobed, digitate-nerved; stem erect; internodes distinct.  
 19. Stem gray, crustose, stout; blade-lobes 4-5, attenuate; inflorescence 2-3-dichotomous; capsule-wings only slightly unequal. 35. B. erythrocarpa  
 19. Stem not crustose.  
 20. Petiole-apex bearing a dense ring of slender trichomes; blade-lobes irregularly sinuate or lobed; ovary-wings narrow. 38. B. ludwigii  
 20. Petiole-apex without a ring of trichomes.  
 21. Inflorescence to 7 times dichotomous; flowers more than 100; tepals 4 mm long; capsule-wings equal. 3. B. parviflora  
 21. Inflorescence only a few times dichotomous; flowers relatively few; tepals 10-25 mm long; capsule-wings very unequal. 44. B. acerifolia  
 18. Blades not strongly lobed.  
 22. The blades straight or nearly so, the longest nerve continuing the direction of the petiole.  
 23. Blades digitate-nerved, generally less than twice as long as wide and widest below the middle, sometimes combined with oblique blades on the same plant.  
 24. Leaves fascicled; petioles to 45 cm long; stem short; internodes mostly shorter than the stipules.  
 25. Tepals subacute, usually dark red; stamens oblong.

30. B. froebelii

25. Tepals rounded, pale.
26. Staminate tepals 6-8 and pistillate tepals 6 or if less than some deeply lobed; capsule-wings very unequal, the largest subtriangular, acute or subacute.
27. Blades triangular-acute; tepals 8-13 mm long; inflorescence elongate, its branches secund.
28. B. aequatorialis
27. Blades rounded throughout or apiculate; tepals 20-30 mm long; inflorescence short, few-flowered, irregularly branched.
29. B. octopetala
26. Staminate tepals 4 and pistillate tepals 5, never lobed; blades shallowly lobed.
28. Upper blade-lobes semiorbicular, their sinuses narrow; blades sparsely vestite beneath; inflorescence once dichotomous.
39. B. triramosa
28. Upper blade-lobes subtriangular, their sinuses broad; inflorescence racemose or subracemose.
33. B. parcifolia
24. Leaves separated by distinct internodes; plants caulescent.
29. Stem scandent.
30. Inflorescence dichotomously branched.
31. Blades broadly rounded or minutely cordate at base, 4-15 cm long, sometimes undulate but otherwise entire; capsule-wings very unequal.
6. B. glabra
31. Blades deeply cordate at base, 4-7 cm long, crenate-dentate; capsule-wings subequal, small; stamens numerous, clavate.
9. B. ynesiae
30. Inflorescence simple, not more than 3-flowered.
32. Stamens few, free or on a low torus.
33. Peduncles solitary, axillary.
15. B. segregata
33. Peduncles several and secund from leafless branches.
16. B. secunda
32. Stamens many on a long column; outer staminate tepals dentate.
18. B. maurandiae
29. Stem erect or ascending.
34. The stem short, very much exceeded by the peduncles; blades strongly vestite beneath; tepals red, 20-35 mm long.
30. B. froebelii
34. Stem elongate; peduncles very short; blades glabrous or nearly so; tepals pale, 3-9 mm long.
35. Stipules and bracts fimbriate; blades narrow, attenuate; capsule-wings very unequal.
45. B. fischeri
35. Stipules and bracts crenate; blades ample, apiculate; capsule-wings equal.
42. B. tiliifolia
23. Blades pinnate-nerved, generally at least twice as long as wide and widest near the middle, rarely combined with oblique blades on the same plant; plants caulescent, usually erect.
36. Inflorescence long and narrow, many-flowered; blades

- slightly asymmetric with the abaxial side somewhat the wider.
37. Plant pubescent; tepals elliptic or ovate; pistillate tepals 4-5; pistillate bracteoles serrate, about equaling the ovary; largest capsule-wing ovate, ca. 1 cm wide.  
4. B. buddleiifolia
37. Plant nearly glabrous; tepals suborbicular; pistillate tepals 2; pistillate bracteoles obscurely undulate or entire, very ample, accrescent; largest capsule-wing falcate, 2-4 cm wide. 27. B. rossmanniae
36. Inflorescence broad and regularly dichotomous or few-flowered.
38. Blade-bases subsymmetric with both sides cuneate or broadly rounded; anthers suborbicular or obovate, much shorter than the filaments; capsules alate.
39. Blade-base cuneate, then narrowly rounded; blade oblanceolate, 10-28 cm long; capsule-wings subequal.  
46. B. maynensis
39. Blade-base broadly rounded; blade elliptic, 4-6.5 cm long; capsule-wings very unequal; (also scandent).  
8. B. holtonis
38. Blade-base strongly asymmetric.
40. The blade-base with both sides meeting the petiole at the same point, one side cuneate or both rounded.
41. Blades with one lateral cusp on the larger side, obliquely cordate at base; pistillate tepals 4.  
47. B. harlingii
41. Blades with only a terminal cusp.
42. Inflorescence 2-5 times dichotomous; capsule-wings unequal.
43. Larger basal blade-lobe overlapping the petiole and the blade often appearing dimidiate, sharply serrate; inflorescence 5-dichotomous.  
48. B. guaduensis
43. Larger basal blade-lobe strongly divergent from the petiole; blades obscurely serrulate; inflorescence 2-3-dichotomous (herbarium specimens not always obviously climbing). 31. B. consobrina
42. Inflorescence unbranched or once dichotomous; capsule-appendages equal.
44. Blades glabrous; capsule alate; tepals 2-3 mm long.  
1. B. semiovata
44. Blades subdensely vestite with coarse tumid-based hairs; capsule horned; tepals 15-25 mm long.  
20. B. longirostris
40. The blade-base dimidiate with one side decurrent on the petiole.
45. Stipules persistent; plant glabrous; ovary and capsule ellipsoid or globose, unequally alate.  
5. B. foliosa
45. Stipules deciduous; plant vestite especially on the branchlets and blade-nerves; ovary and capsule

- turbinate, equally 3-horned.
46. Stamens 4; staminate tepals 11-16 mm long.  
 47. Staminate tepals very unequal, ovate, acute;  
 blades glabrous above. 21. B. tetrandra
47. Staminate tepals subequal, oblong, deeply retuse;  
 blades hirtellous above. 22. B. valvata
46. Stamens more than 4; staminate tepals 3-8 mm long;  
 blades variable. 23. B. urticae
22. Blades oblique to transverse, their longest nerve making  
 an angle with the petiole.
48. Blade-base cuneate on one side; blade pinnate-nerved  
 (climbing habit not always evident in herbarium  
 specimens).
49. Peduncle less than 1 cm long; inflorescence densely few-  
 flowered. 43. B. albomaculata
49. Peduncle much more than 1 cm long; inflorescence laxly  
 2-3-dichotomous. 32. B. consobrina
48. Blade-base cordate.
50. Stipules and bracts fimbriate, persistent; inflorescence  
 simple or once dichotomous.
51. Plant low, soft, annual or of shorter duration, tepals  
 2-4 mm long. 2. B. humilis
51. Plant medium, firm, perennial; staminate tepals to  
 8 mm long; pistillate tepals 3-6 mm long (blades also  
 straight). 45. B. fischeri
50. Stipules and bracts entire, sometimes quickly  
 deciduous; inflorescence mostly many-flowered.
52. Stem short, stout, exceeded by the petioles; peduncles  
 much exceeding the leaves (blades also straight).  
 30. B. froebelii
52. Stem long, slender, much exceeding the petioles;  
 peduncles slightly if at all exceeding the leaves.
53. Stipules inconspicuous, quickly deciduous, stems  
 glabrous.
54. Inflorescence simple, 3-flowered (staminate) or  
 1-flowered (pistillate); capsule turbinate, equally  
 3-horned. 24. B. mariae
54. Inflorescence once or more often twice dichotomous.
55. Staminate pedicels much enlarged toward apex;  
 capsule turbinate, equally 3-horned.  
 25. B. fuchsiflora
55. Staminate pedicels very slender throughout; capsule  
 ellipsoid, unequally 3-alate. 49. B. piurensis
53. Stipules conspicuous, persistent; inflorescence 1-3  
 times dichotomous.
56. Inflorescence with many flowers in dense terminal  
 clusters; stem, petioles, blades and inflorescence-  
 branches villous; capsule exalate. 26. B. exalata
56. Inflorescence lax throughout; stem, petioles, blades  
 and inflorescence-branches sparsely pubescent to  
 glabrous; capsule alate.
57. Stipules, bracts and bracteoles narrow, bracteoles

deciduous.

50. B. microcarpa

57. Stipules, bracts and bracteoles ample; bracteoles persistent.

31. B. pastoensis

Section DORATOMETRA (Kl.) A. DC.

(Section Poecilia A. DC.)

1. B. SEMIOVATA Liebm., Kjoeb. Vidensk. Meddel. 1852: 22. 1853. B. spruceana A. DC., Ann. Sci. Nat. IV. 11: 142. 1859. B. flexuosa A. DC., loc. cit. B. guyanensis A. DC., loc. cit. B. guyanensis var. glaberrima C. DC., Bot. Gaz. 20: 540. 1895. Type: Oersted 209 (Holotype, C; photo, F), Nicaragua. Ecuador: Cotopaxi, Esmeraldas, Guayas, Los Rios, Napo, Pastaza, Pichincha, Tungurahua. Mexico to Guiana and Peru. 2. B. HUMILIS Dryand. in Ait., Hort. Kew. 3: 353. 1789. B. lucida Haworth, Saxifrag. Enum. 197. 1821. B. meyeniana Walp. in Nov. Act. Leop.-Carol. 19, Suppl. 1: 409. 1843. B. subhumilis A. DC., Ann. Sci. Nat. IV. 11: 124. 1859. B. pavoniana A. DC., op. cit. p. 142. Type: Kew Hortus s n (Holotype, BM; photo, GH), West Indies. Stems and petioles glabrous or (B. subhumilis) with a few fine hairs toward their apices. Ecuador: Los Rios, Morena-Santiago, Napo, Zamora-Chinchipe. West Indies to Peru and Brazil.

Section SCHEIDWEILERIA (Kl.) A. DC.

3. B. PARVIFLORA Poepp. & Endl., Nov. Gen. & Sp. 1: 7, pl. 12. 1835. B. micrantha Steud., Nomencl. ed. 2. 1: 194. 1840. Scheidweileria parviflora (Poepp. & Endl.) Kl. Begon. 59. 1855. Begonia myriantha Britton, Bull. Torrey Bot. Club 18: 35. 1891. Type: Poeppig s n (Holotype, W), Peru. Ecuador: Bolívar, Cotopaxi, Loja, Morona-Santiago, Napo, Pastaza, Pichincha, Santiago-Zamora, Tungurahua. Colombia to Bolivia.

Section PILDERIA (Kl.) A. DC.

4. B. BUDDLEIIIFOLIA A. DC., Ann. Sci. Nat. IV. 11: 141. 1859. Pilderia urticaefolia Kl., Monatsb. Berlin Akad. 127. 1854. Begonia urticaefolia Hort. ex Kl., Monatsb. Berlin Akad. 127. 1854, nomen. B. lantanaefolia A. DC., Ann. Sci. Nat. IV. 11: 141. 1859. B. pilderia A. DC. in DC. Prod. 15, pt. 1: 380. 1864. B. urticifolia (Kl.) Warb., Pflanzenfam. 3, Abt. 6a: 144. 1894, non Smith 1790.

Type: Spruce 3998 (Holotype, G; photo, GH), Peru.

Ecuador: Morona-Santiago, Pastaza, Santiago-Zamora, Tungurahua Venezuela, Colombia, Peru.

Section LEPSIA (Kl.) A. DC.

5. B. FOLIOSA H.B.K., Nov. Gen. & Sp. Pl. 7: 183, pl. 642. 1825. ? B. elegans H. B. K., op. cit., 182. B. putzeysiana A. DC., Ann. Sci. Nat. IV. 11: 139. 1859. B. jamesoniana A. DC., loc. cit. B. foliosa H. B. K. var. rotundata L. B. Smith & Schubert, Caldasia 4, no. 18: 192, pl. 17. 1946; var. putzeysiana

(A. DC.) L. B. Smith & Schubert, loc. cit.; var. australis L. B. Smith & Schubert, op. cit. p. 194, pl. 17.

Type: Humboldt & Bonpland s n (Holotype, P; photo, US), Colombia.

Ecuador: Azuay, Carchi, Morona-Santiago, Pastaza, Pichincha, Tungurahua. Venezuela, Colombia.

Section PRITZELIA (Kl.) A. DC.  
(Section Wageneria A. DC.)

6. B. GLABRA Aubl. Pl. Guian. 2: 916, pl. 349. 1775. B.  
scandens Sw. Prod. 86. 1788. B. elliptica H. B. K., Nov. Gen. & Sp. 7: 180, pl. 641. 1825. B. lucida Otto & Dietr., Allg. Gartenz. 16: 162. 1848. B. mortiziana Kunth & Bouché, Ind. Sem. Hort. Berol. 16. 1848. B. physalifolia Liebm., Kjoeb. Vidensk. Meddell. 1852: 19. 1853.

Type: Aublet s n (Holotype, BM; photo GH), French Guiana.

Ecuador: Cotopaxi, Esmeraldas, Guayas, Los Ríos, Manabi, Napo, Oro, Pastaza, Pichincha, Santiago-Zamora, Tungurahua. Southern Mexico and the West Indies to Guiana, Peru and Bolivia.

7. B. AERANTHOS L. B. Smith & Schubert, Mem. N. Y. Bot. Gard. 8: 36, fig. 2 a-e. 1952.

Type: Camp E-1317 (Holotype, NY; photo, US), Ecuador.

Ecuador: Zamora-Chinchipe (Santiago-Zamora).

Section MEIONANTHERA A. DC.

8. B. HOLTONIS A. DC., Ann. Sci. Nat. IV. 11: 141. 1859. ?B.  
umbrata A. DC. in DC. Prod. 15, pt. 1: 396. 1864. B. foliosa H. B. K., var. amplifolia L. B. Smith & Schubert, Caldasia 4, no. 18: 198, pl. 17. 1946. B. schimpfii Irmsch., Bot. Jahrb. 74: 604. 1949.

Type: Holton 725 (Holotype, G; isotype, GH), Colombia.

Ecuador: Azuay, Bolívar, Guayas. Colombia.

Section GOBENIA A. DC.

9. B. YNESIAE L. B. Smith & D. C. Wasshausen, sp. nov. A B.  
sodiroi C. DC., cui affinis, foliorum laminis margine crenato-dentatis, basifixis profunde cordatisque vel peltatis et basi plus minusve indentatis differt.

Plant climbing, perennial, glabrous; stem flexuous, woody; cortex red becoming gray, rimose and friable on old stems; internodes 1-3 cm long. Stipules persistent, broad, to 5 mm long, entire, thin, brown. Petioles to 9 cm long, red. Blades broadly ovate, acute or acuminate, 4-7 cm long, crenate-dentate, basifix and deeply cordate or peltate and more or less indented at base, pale beneath. Peduncles usually single and axillary, 1.5-4 cm long, very slender. Inflorescence several times dichotomous; bracts persistent, like the stipules. Staminate pedicels 2-5 mm long; tepals 4, red, the outer broadly ovate, obtuse, 12 mm long, entire, the inner elliptic, ca. 10 mm long. Stamens many on a low torus, clavate with short or no filaments, the enlarged connective enveloping the pollen sacs. Pistillate pedicels to 10 mm long in fruit; bracteoles suborbicular, covering

the young ovary; tepals 6, ovate, subequal, 4 mm long. Ovary 4-celled, subglobose; wings subequal, small; placentae bilamellate, ovuliferous throughout; styles less than 1 mm long, the stigmatic tissue reniform. Pl. 1.

Type: Ecuador: Pichincha: Canton Quito: Alaspongo; trail Nono to Gualea; dense forest, alt. 3124 m, Ynes Mexia 7706 (Holotype, AA; isotype, US).

Paratypes: Corazon (?), André 3661 (NY). Quito-Mindo road, west side Andes, rainforest, Prescott 1467 (NY); 1494 (NY); 1505 (NY).

10. B. PULULAHUANA C. DC., Bull. Herb. Boiss. II. 8: 325. 1908.

Type: Sodiro 589 (Holotype, G; photo F), Ecuador.

Ecuador: Loja, Napo, Pichincha.

11. B. TROPAEOLIFOLIA A. DC., Ann. Sci. Nat. IV. 11: 120. 1859  
Var. TROPAEOLIFOLIA.

Type: Triana 3637 (Holotype, G; photo US; isotype, BM).

Peduncle and inflorescence glabrous.

Ecuador: Not yet found.

Var. PUBERULA L. B. Smith & Schubert, Lloydia 13: 87. 1950.

Type: Steyermark 54173 (Holotype, GH; isotype, F).

Peduncle and inflorescence puberulous.

Ecuador: Oro.

12. B. SODIROI C. DC., Bull. Herb. Boiss. II. 8: 323. 1908.

Type: Sodiro 588 (Holotype, G; photo, F), Ecuador.

Ecuador: Cotopaxi, Napo, Pichincha.

13. B. HITCHCOCKII Irmsch., Bot. Jahrb. 74: 620. 1949.

Type: Hitchcock 21800 1/2 (Holotype, US), Ecuador.

Ecuador: Napo, Tungurahua.

14. B. TRUNCICOLA Sodiro ex C. DC., Bull. Herb. Boiss. II. 8: 323. 1908.

Type: Sodiro 587 (Holotype, G; photo, F), Ecuador.

Ecuador: Carchi, Cotopaxi - Pichincha.

15. B. SEGREGATA L. B. Smith & Schubert, Begonian 27: 224, pl. 1960.

Type: Alston 8455 (Holotype, BM), Colombia.

Ecuador: Carchi. Colombia.

16. B. SECUNDA L. B. Smith & D. C. Wasshausen, sp. nov. A B. maurandiae A. DC., cui affinis, foliorum laminis subintegris, pedunculis aliquot e ramis exfoliatis secunde portatis, tepalis masculinis suborbicularibus minoribus differt.

Plant climbing, perennial; stem flexuous, woody, yellow-brown, sulcate, laxly and minutely glandular; internodes ca. 2 cm long. Stipules persistent, broadly ovate to suborbicular, acuminate, 2 mm long, entire, thin, brown, nerveless, glabrous. Petioles to 6 cm long, glabrous. Blades basifixed, ovate, attenuate, truncate or slightly retuse at base, 8 cm long, 4 cm wide, subentire, subglabrous, pale beneath. Peduncles several and secund from leafless branches, 2 cm long, filamentous, glabrous. Inflorescence 3-flowered with the single staminate flower central; bracts persistent, like the stipules. Staminate pedicel 2 mm long; tepals 4, the outer subreniform, 3.5 mm wide, entire, red, very

sparsely pubescent, the inner saccate, 1.5 mm long, white. Stamens few, nearly free; filaments longer than the anthers; anthers ellipsoid with the enlarged connective enveloping the pollen sacs. Pistillate pedicels 15 mm long, longer in fruit; bracteoles persistent, ample, covering the ovary and capsule; tepals 5 (?), suborbicular, fleshy, the outer 1.5 mm long, the inner smaller, reniform. Ovary subglobose; wings very unequal, the largest falcate, ascending, to 10 mm wide and 5 mm high in fruit; placentae bilamellate, ovuliferous throughout; styles less than 1 mm long, the stigmatic tissue reniform. Pl. 2.

Type: Ecuador: Pichincha: Tandapi, epiphytic on tree trunk in forest, I. Holmgren 847 (Holotype, S; photo, US).

17. B. DODSONII L. B. Smith & D. C. Wasshausen, sp. nov. A B. truncicola Sodiro ex C. DC., cui valde affinis, foliorum laminis grosse sinuato-dentatis concoloribus differt.

Plant climbing, perennial; stem slightly flexuous, woody, gray-crustose on thicker parts, climbing to 5 m level (! Dodson). Stipules persistent, ovate, acuminate, 5 mm long, brown, glabrous. Petioles to 7 cm long, glabrous. Blades peltate, ovate, acuminate, evenly rounded at base, to 11 cm long, 4.5 cm wide, coarsely sinuate-dentate, concolorous, very sparsely pubescent beneath when young. Peduncles several from leafless branches, 2 cm long, filamentous, glabrous. Inflorescence 3-flowered with the single staminate flower central; bracts persistent, like the stipules. Staminate pedicel 5 mm long; tepals 4, entire, orange (! Dodson), the outer suborbicular, 5 mm long, the inner broadly obovate, 4 mm long. Stamens few, free, broadly clavate with filaments shorter than the anthers; the connective enveloping the pollen sacs. Pistillate pedicels 10 mm long in fruit; bracteoles persistent, broadly elliptic, entire or sparsely dentate, covering the fruit; tepals 5 (?), elliptic, ca. 1 mm long. Ovary subglobose, white (! Dodson); wings very unequal, the largest 10 mm wide and 4 mm high in fruit; styles less than 1 mm long. Pl. 3.

Type: Ecuador: Pichincha: Canton Santo Domingo, Centinela, 12 km east of Patricia Pilar, alt. 600 m, C. H. Dodson, T. Dodson & A. Embree 7115 (Holotype, SEL; isotype, US).

18. B. MAURANDIAE A. DC., Ann. Sci. Nat. IV. 11: 119. 1859.

B. hederacea A. DC., Ann. Sci. Nat. IV. 11: 120. 1859.

Type: Triana 386 (Holotype, K; isotype, GH), Colombia.

Ecuador: Azuay, Carchi, Imbabura, Napo, Pichincha, Santiago-Zamora, Tungurahua. Colombia.

19. B. GEMMIFLORA L. B. Smith & D. C. Wasshausen, sp. nov.

A B. hitchcockii Irmsch., cui affinis, tepalis masculinis ellipticis, staminum columna elongata differt.

Plant climbing, perennial; stem flexuous, woody, gray-crustose, hirtellous; internodes ca 2 cm long. Stipules of stem large, soon disintegrating, those of branches persistent, ovate, acuminate, 2 mm long, 1-nerved, brown, glabrous. Petioles to 7 cm long, soon glabrous. Blades peltate, ovate, acute or acuminate, evenly rounded at base, 10 cm long, 6 cm wide, subentire, sparsely puberulent beneath around the umbo, pale beneath.

Peduncles 4 cm long, sparsely pubescent, soon glabrous. Inflorescences unisexual with evidently the single staminate flower suppressed in one and the 2 lateral pistillate in the other; bracts persistent, elliptic, 3 mm long, entire, thin, brown, pubescent. Staminate pedicel 3 mm long, pubescent; tepals 4, entire, red, the outer broadly elliptic, 20 mm long, sparsely pubescent, the inner shorter. Stamens many on a 12 mm long column; filaments about equaling the anthers, stout; anthers obovoid with the connective enveloping the pollen sacs. Pistilate pedicels 2 cm long; bracteoles persistent, suborbicular, covering the fruit; tepals 5 (?), elliptic, 2 mm long. Ovary subglobose; wings very unequal, the largest 15 mm wide and 6 mm high in fruit; styles less than 1 mm long. Pl. 4.

Type: Ecuador: Pichincha: Road from Santo Domingo to Quito, Cornejo Astorga (Tandapi), climbing in shrub vegetation, alt. ca. 1800 m, Harling, Storm & Ström 9262 (Holotype, US; isotype, S).

Section CASPARYA (A. DC.) Warb.

(Semibegoniella C. DC.)

20. B. LONGIROSTRIS Benth., Pl. Hartweg. 185. 1845. Casparya grewiaeefolia A. DC., Ann. Sci. Nat. IV. 11: 117. 1859. C. grewiaeefolia var. jamesoniana A. DC.; var. pavoniana A. DC. in DC. Prod. 15, pt. 1: 272. 1864. C. longirostris (Benth.) A. DC., loc. cit. Begonia grewiaeefolia (A. DC.) Warb. in Pflanzenfam. 3, Abt. 6a: 146. 1894. Semibegoniella jamesoniana (A. DC.) C. DC., Bull. Herb. Boiss. II. 8: 327. 1908. C. sodiroi C. DC., loc. cit. Begonia colombiana L. B. Smith & Schubert, Caldasia 4, no. 16: 29, pl. 6. 1946.

Type: Hartweg s n (Holotype, K; photo, GH), Ecuador.

Ecuador: Imbabura, Napo, Pastaza, Pichincha. Colombia.

21. B. TETRANDRA Irmsch., Bot. Jahrb. 74: 626, pl. 7. 1949.

Type: Lobb s n (Paratype, W), Peru; Hitchcock 21889 (Paratype, US), Ecuador.

Ecuador: Napo, Pastaza, Tungurahua. Peru.

22. B. VALVATA L. B. Smith & Schubert, Mem. N. Y. Bot. Gard. 8: 40, fig. 2 f-i. 1952.

Type: Camp E-1560 (Holotype, NY), Ecuador.

Ecuador: Morona-Santiago.

23. B. URTICAE L. f., Suppl. 420. 1781. B. columnaris Benth., Pl. Hartweg. 131. 1844. Sassea glabra Kl., Monatsber. Berlin Akad. 128. 1854. Casparya columnaris beta glabra (Kl.) A. DC. in DC. Prod. 15, pt. 1: 274. 1864. Begonia monticola C. DC., Bull. Herb. Boiss. II. 8: 325. 1908. B. torresii Standl., Journ. Washington Acad. Sci. 17: 313. 1927. B. chiriquensis Standl. in Woodson & Schery, Ann. Missouri Bot. Gard. 27: 321. 1940. B. columnaris Benth. var. glabra (Kl.) L. B. Smith & Schubert in Macbride, Fl. Peru in Field Mus. Pub. Bot. 13, pt. 4: 187. 1941.

Type: Mutis s n (Holotype, M?), Colombia.

Ecuador: Azuay, Carchi, Imbabura, Loja, Morona-Santiago, Napo, Pichincha, Zamora-Chinchipe. Venezuela and Costa Rica to Peru.

24. B. MARIAE L. B. Smith, Phytologia 27: 213, pl. 2. 1973.

Type: John J. & Marie L. Wurdack & Tillett 2782 (Holotype, US; isotype, VEN), Venezuela.

Ecuador: Napo. Venezuela.

25. B. FUCHSIIIFLORA (A. DC.) Warb. in Pflanzenfam. 3, Abt.

6a: 146. 1894, as "fuchsiiifolia"; Baranov & Barkley, Phytologia

26: 220. 1973. Casparya fuchsiaeflora A. DC., Ann. Sci. Nat. IV.

11: 116. 1859.

Type: Jameson 415 (Holotype, G; photo, F), Ecuador.

Ecuador: Imbabura, Napo.

#### Section APTERON C. DC.

26. B. EXALATA C. DC., Bull. Herb. Boiss. II. 8: 326. 1908.

Type: Sodiro 597 (Holotype, G; photo, F), Ecuador.

Ecuador: Bolivar, Pichincha.

#### Section ROSSMANNIA (Kl.) A. DC.

27. B. ROSSMANNIAE A. DC. in DC. Prod. 15, pt. 1: 333. 1864.

Rossmannia repens Kl., Begon. 99, pl. 9, fig. A. 1855.

Type: Ruiz & Pavon s n (Holotype, BM), Peru.

Ecuador: Morona-Santiago, Napo, Pastaza, Santiago-Zamora, Tungurahua. Colombia to Peru.

#### Section EUPETALUM (Lindl.) A. DC.

(Section Huszia A. DC.)

28. B. AEQUATORIALIS L. B. Smith & Schubert, Lloydia 13: 85.

1950.

Type: Steyermark 52878 (Holotype, GH; isotype, F), Ecuador.

Ecuador: Azuay, Chimborazo.

29. B. OCTOPETALA L'Hérit., Stirp. Nov. 101. 1788. B. grandiflora Knowles & Westcott, Flor. Cab. 1: 51. 1837. Huszia octopetala (L'Hérit.) Kl., Begon. Monatsber. Berlin Akad. 121. 1854.

B. octopetala L'Hérit. ssp. ovatiformis Irmsch. Bot. Jahrb. 76: 75. 1953.

Type: Dombey s n (Holotype, P), Peru.

Ecuador: Bolivar, Cañar, Cotopaxi, Loja, Pastaza. Peru.

30. B. FROEBELII A. DC., Gard. Chron. 2: 552. 1874.

Type: Froebel Hortus s n (Holotype, G?), Ecuador.

Ecuador: Cañar, Chimborazo.

31. B. PASTOENSIS A. DC., Ann. Sci. Nat. IV. 11: 121. 1959.

Type: Triana 3031 (Holotype, K; photo, US), Colombia.

Ecuador: Bolivar. Colombia.

#### Section RUIZOPAVONIA A. DC.

32. B. CONSOBRINA Irmsch. in Diels, Biblioth. Bot. 29: Heft 116: 111. 1937.

Type: Diels 995 (Holotype, B; photo, US), Ecuador.

Ecuador: Morona-Santiago, Napo, Pastaza, Santiago-Zamora, Tungurahua.

#### Section BEGONIA

(Section Begoniastrum A. DC.)

33. B. PARCIFOLIA C. DC., Smithsonian Misc. Coll. 69, no. 12: 10. 1919. B. nervidens Irmsch., Bot. Jahrb. 74: 614. 1949.  
Type: Townsend 947 (Holotype, US), Ecuador.  
Ecuador: Loja, Oro.
34. B. COMPACTICAULIS Irmsch., Bot. Jahrb. 74: 612. 1949. B. griseocaulis sensu L. B. Smith & Schubert, Mem. N. Y. Bot. Gard. 8 (1): 38. 1952, ex parte, non Irmsch. 1949. Pl. 5.  
Type: Hitchcock 20315 (Holotype, US), Ecuador.  
Ecuador: Chimborazo.
35. B. ERYTHROCARPA A. DC., Ann. Sci. Nat. IV. 11: 121. 1859.  
B. griseocaulis Irmsch. in Diels, Biblioth. Bot. 29, Heft 116: 112. 1937. B. pennellii L. B. Smith & Schubert, Field Mus. Publ. Bot. 13 (4): 196. 1941. B. lobato-peltata Irmsch. Bot. Jahrb. 76: 86. 1953.  
Type: Weddell 4729 (Holotype, G), Bolivia.  
Ecuador: Azuay, Chimborazo. Peru, Bolivia.

36. B. ASYMPETALA L. B. Smith & D. C. Wasshausen, sp. nov.  
Inter species ecuadorenses quoad habitum acaulem haud tuberiferum et foliorum laminis peltatis B. serotinam accedit sed foliorum laminis valde asymmetricis, grosse duplikato-serratis, base emarginatis plicatisque differt.

Plant herbaceous, perennial. Stem erect, stout, 6 cm high, covered with the remains of old stipules. Leaves few, fasciculate at apex of stem. Stipules imbricate, persistent, broadly ovate, acute, ca. 1 cm long, entire, thick, glabrous, brown and rugose when dry, evidently fleshy when live, lateral nerves obscure. Petioles 4-6 cm long, laxly puberulent. Blades peltate, oblique and strongly asymmetric, 9-11 cm long, 5-7.5 cm wide, emarginate and plicate at base, pale beneath, sparsely puberulent on both sides. Peduncle terminal, erect, 15 cm long, much exceeding the leaves, glabrous in age. Inflorescence laxly 3-dichotomous, 12 cm wide, glabrous in age; bracts unknown. Staminate flowers unknown. Pistillate pedicels 15 mm long; bracteoles unknown; tepals 5, subequal, oblanceolate, subacute, ca. 7 mm long, entire. Ovary broadly ellipsoid, 9 mm long in fruit; wings subequal, broadly ovate, obtuse; placenta bilamellate; styles 3, subfree, bifid; stigmatic tissue linear, continuous, twice spiraled on each branch. Pl. 6.

Type: Ecuador: Los Rios: Hacienda Clementina, river side in virgin forest, epiphyte, alt. 150 m, Gunnar Harling 201 (Holotype, S; photo, US).

37. B. SEROTINA A. DC., Ann. Sci. Nat. IV. 11: 121. 1859. B. permata Irmsch., Bot. Jahrb. 76: 190. 1953.

Type: Jameson 594 (Holotype, K), Ecuador.

Ecuador: Chimborazo, Cotopaxi, Guayas, Manabi.

38. B. LUDWIGII Irmsch. in Diels, Biblioth. Bot. 116: 113. 1937.

Type: Diels 1204 (Holotype, B), Ecuador.

Ecuador: Chimborazo, Oro.

39. B. TRIRAMOSA Irmsch., Bot. Jahrb. 74: 613. 1949.

Type: Rose 22493b ("224936") (Holotype, US).

Ecuador: Chimborazo.

40. B. XEROPHYTA L. B. Smith & D. C. Wasshausen, sp. nov. A  
*B. parcifolia* C. DC., cui verisimiliter affinis, foliorum  
laminis cum sinu basali aperto, floribus masculinis 6-plo  
majoribus differt.

Plant herbaceous, perennial. Stem erect, stout, known only from 4 cm. Leaves few, fasciculate at apex of stem. Stipules imbricate, persistent, broadly ovate to reniform, brown and rugose when dry, evidently fleshy when live, puberulent, ciliate. Petioles to 10 cm long, fleshy (?), red, puberulent. Blades basifixed, oblique and strongly asymmetric, broadly ovate to sub-reniform, deeply cordate at base, 15-23 cm wide and 13-16 cm high, shallowly lobate and duplicate-serrate, laxly puberulent above, white-tomentulose beneath. Peduncles terminal, erect, to 30 cm long, much exceeding the leaves, fleshy (?), red, puberulent. Inflorescence subracemously 3-flowered; bracts deciduous, suborbicular, 2 cm long, fimbriate, thin, red. Staminate pedicels 4-5 cm long; tepals 4, the outer elliptic, obtuse, 18-30 mm long, 15 mm wide, entire, red outside, white inside; the inner broadly obovate, truncate or slightly retuse, 25 mm long, white to very pale pink (! Asplund). Stamens over 100 on a low torus; filaments 7 mm long; anthers elliptic, 2 mm long. Pistillate flowers (young) subsessile; bracteoles like the bracts; tepals 5, the 2 outer elliptic, much larger than the inner, red. Ovary ellipsoid; wings subequal, evenly rounded; styles 3, bifid; stigmatic tissue linear, spiral. Pl. 7.

Type: Ecuador: Loja: Between Loja and San Lucas, very steep and dry slope, alt. ca. 2100 m, Erik Asplund 18036 (Holotype, S; photo, US).

41. B. SPARREANA L. B. Smith & D. C. Wasshausen, sp. nov. A  
*B. parcifolia* C. DC., cui parum affinis, foliorum laminis haud  
lobatis, cum sinu basali aperto, inflorescentiis folia subaequantibus,  
tepalis femineis 4, exterioribus subaequalibus differt.

Plant herbaceous, perennial. Stem erect, known only from 4 cm. Leaves few, fasciculate at apex of stem. Stipules imbricate, deciduous, ovate, filiform-attenuate, 10 mm long, entire, thin, nerved, brown, pubescent. Petioles 3-7 cm long, slender, laxly pubescent. Blades basifixed, oblique, deeply cordate at base, to 15 cm long, 10 cm wide, evenly rounded except at apex, finely setose-serrate, sparsely pubescent above and very sparsely beneath. Peduncles 5-7 cm long, about equaling the leaves, laxly pubescent. Inflorescences simply racemose or unequally dichotomous with one branch simple and one racemose, laxly pubescent; bracts persistent, like the stipules but elliptic and rounded. Staminate pedicels 5-7 mm long; tepals 4, entire, the outer suborbicular, 9 mm long, slightly colored, the inner lance-ovate, 8 mm long, white. Stamens ca. 25, free; filaments 2 mm long; anthers elliptic, 1 mm long, the connective apex slightly produced, broadly rounded. Pistillate pedicels 8 mm long; bracteoles like the bracts; tepals 5, the 4 outer broadly elliptic, rounded and apiculate, 7 mm long, the inner one elliptic, acute, smaller. Ovary ellipsoid; wings slightly unequal, triangular with a horizontal upper margin; placentae bilamellate; styles 3, free,

slender, bifid; stigmatic tissue linear, continuous, twice spiraled on the arms. Pl. 8.

Type: Ecuador: Morona-Santiago: Gualquiza, Misión Bomboiba, Mision Salesiana, primary and secondary tropical rainforest, alt. ca. 700-800 m, Benkt Sparre 19025 (Holotype, S; photo, US).

42. B. TILIIFOLIA C. DC., Bull. Herb. Boiss. II. 324. 1908, as "tiliaeefolia".

Type: Sodiro 584 bis (Holotype, G); 554e (G, paratype; F, photo), Ecuador.

Ecuador: Carchi, Cotopaxi, Pichincha. Panama, Colombia.

43. B. ALBOMACULATA C. DC. ex Huber, Bol. Mus. Para 4: 593. 1906, description legal but useless.

Type: Hortus Museu Goeldi s n (Holotype, MG), Peru. Det. C. DC.: Sodiro 590a (G; F, photo). Type not seen, identification by photo of Sodiro 590a.

Ecuador: Oro, Pichincha. Peru.

44. B. ACERIFOLIA H.B.K., Nov. Gen. & Sp. 7: 186, pl. 644. 1825. B. dolabifera C. DC., Bull. Herb. Boiss. II. 8: 324. 1908.

Type: Humboldt & Bonpland s n (Holotype, P; photo, US), Ecuador.

Ecuador: Azuay, Bolivar, Chimborazo (?), Loja.

45. B. FISCHERI Schrank, Pl. Rar. Hort. Acad. Monac. 2: pl. 59. 1820.

Var. FISCHERI. B. patula sensu Kl., Begon. 30. 1855, non Haworth 1819. B. tovarensis Kl., Begon. 31. 1855.

Type: Munich Hortus s n (Holotype, M), Brazil.

Blades all reniform and oblique.

Ecuador: Not yet found.

Var. KLUGII Irmsch., Bot. Jahrb. 76: 99. 1953.

Type: Klug 3389 (Holotype, US), Peru.

Blades or some of them ovate and straight.

Ecuador: Loja, Morona-Santiago, Pastaza, Zamora-Chinchipe. Peru.

46. B. MAYNENSIS A. DC., Ann. Sci. Nat. IV. 11: 126. 1859.

Type: Spruce 4859 (Holotype, G; photo, F), Peru.

Ecuador: Napo, Pastaza, Santiago-Zamora, Zamora-Chinchipe. Peru.

47. B. HARLINGII L. B. Smith & D. C. Wasshausen, sp. nov. Ab omnibus speciebus ecuadorensibus foliorum laminis lateraliter unicuspidatis, pedunculis brevibus, inflorescentia pauciflora, tepalis femineis 4 differt.

Plant ascending, perennial, 20-26 cm high; stem nearly straight, red, pubescent; internodes to 5 cm long. Stipules deciduous, oblong, acute, 12 mm long, 1-nerved, entire, thin, green. Petioles to 33 mm long, pubescent. Blades straight, strongly asymmetric with one side lanceolate and evenly curved, the other elliptic with a single lateral cusp, cordate, acuminate, to 13 cm long, 6 cm wide, coarsely serrate, thin, pubescent on the nerves beneath. Peduncles axillary, to 18 mm long. Inflorescence few-flowered, glabrous, bracts deciduous, elliptic, 10 mm long. Stamineate pedicel 9 mm long; tepals 4, entire,

white, the outer broadly ovate, 9 mm long, the inner oblong, obtuse, 6 mm long. Stamens about 20, free; filaments short; anthers oblong, ca. 2 mm long; connective produced, obtuse. Pistillate pedicels 6 mm long in fruit; bracteoles deciduous, like the bracts; tepals 4, punctulate, the (young) outer broadly ovate, 5 mm long, the inner oblong. Ovary ellipsoid, punctulate; wings subequally alate, the wings triangular with the upper margin horizontal; placentae bilamellate; styles 4, highly connate, bifid, the stigmatic tissue continuous, once spiral. Pl. 9.

Type: Ecuador: Los Rios: Hacienda Clementina, virgin forest, Samana, alt. 750 m, G. Harling 487 (Holotype, S; photo, US); 521 (Paratype, S; photo, US; flowers malformed and bisexual as if diseased).

48. *B. GUADUENSIS* H.B.K., Nov. Gen. & Sp. 7: 178. 1825. *B. ottonis* Walpers, Repert. Bot. Syst. 2: 212. 1843. *B. serratifolia* C. DC., Smithsonian Misc. Coll. 69, no. 12: 7. 1919.

Type: Humboldt s n (Holotype, P; photo, US), Colombia.

Ecuador: Santiago-Zamora, Zamora-Chinchipe. Colombia, Venezuela, Peru.

49. *B. PIURENSIS* L. B. Smith & Schubert, Field Mus. Pub. Bot. 13, pt. 4: 197. 1941.

Type: Stork 11393 (Holotype, UC; isotype, GH), Peru.

Ecuador: Chimborazo. Peru.

50. *B. MICROCARPA* A. DC. in DC. Prod. 15, pt. 1: 311. 1864.

Type: Spruce 5070 (Holotype, G; photo, F), Ecuador.

Ecuador: Province unknown. Colombia.

## Plate 1.



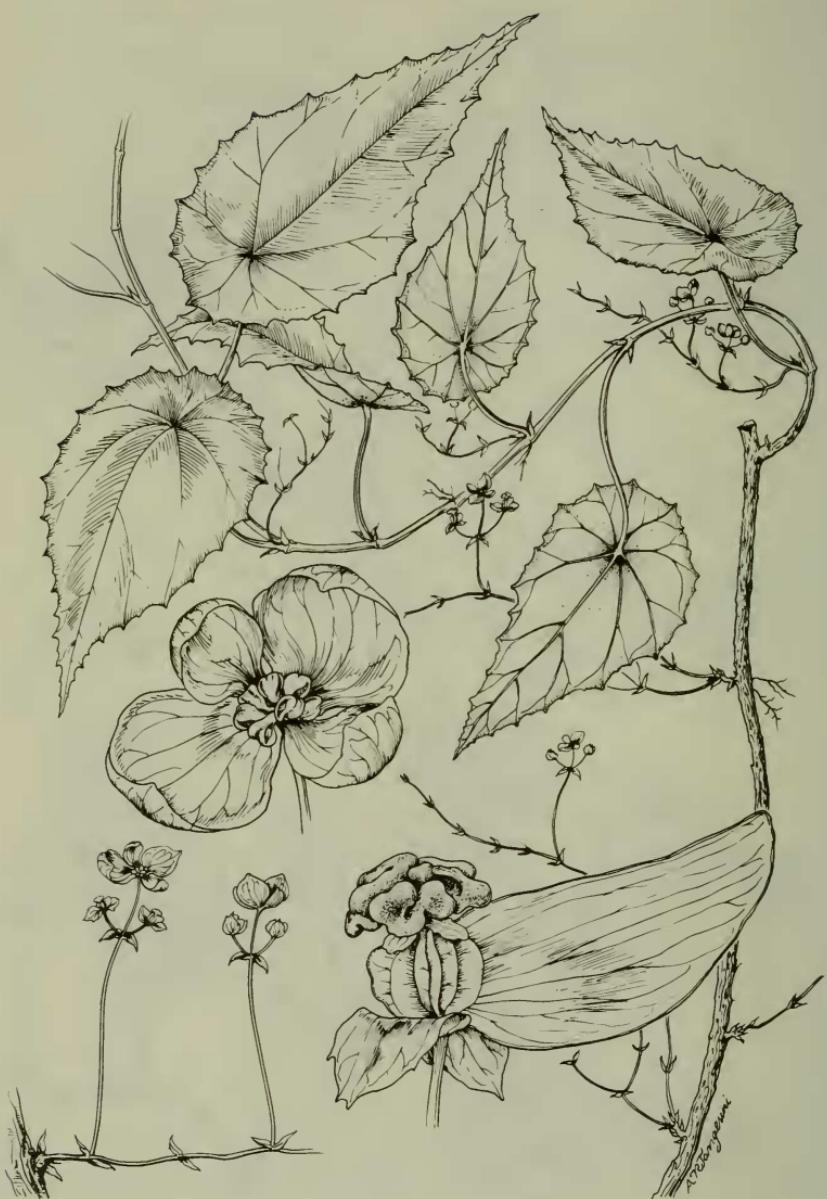
Begonia ymesiae L. B. Smith &amp; Wasshausen

## Plate 2.



Begonia secunda L. B. Smith &amp; Wasshausen

## Plate 3.



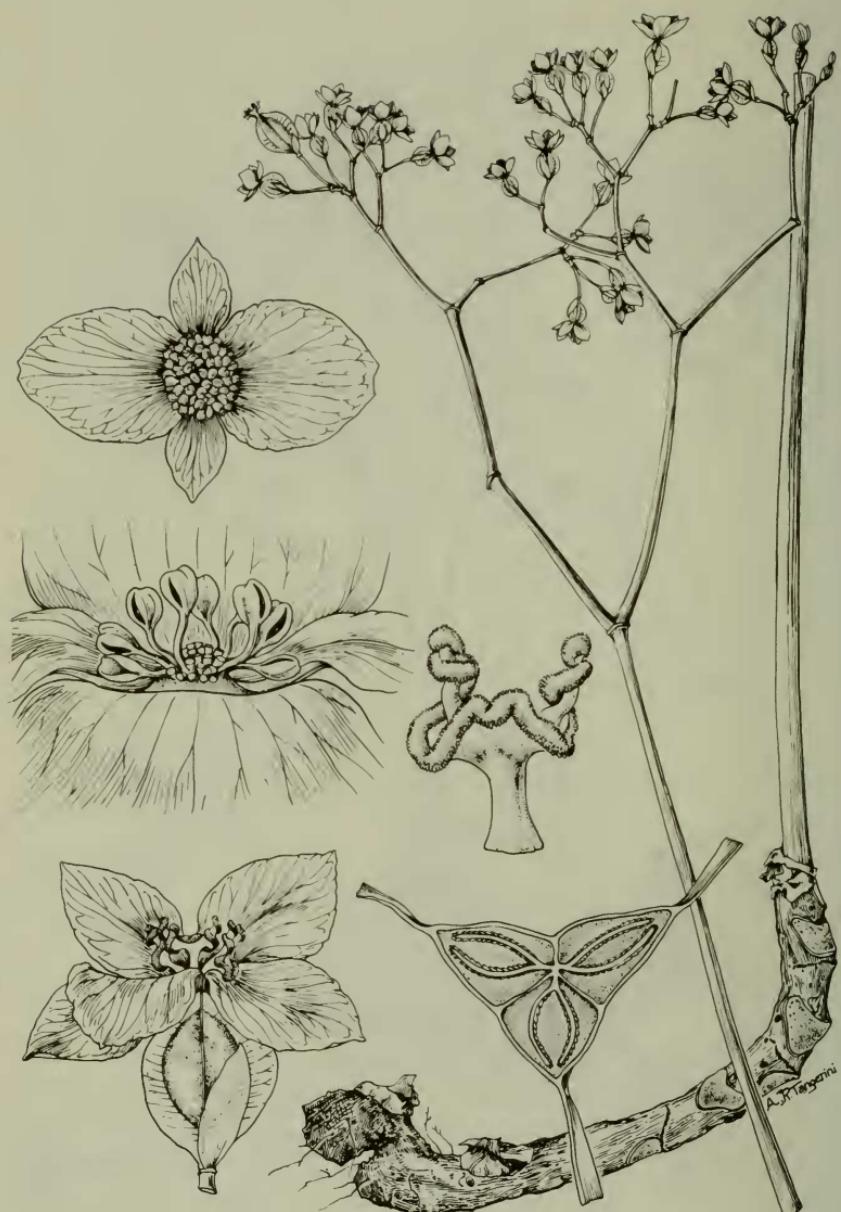
*Begonia dodsonii* L. B. Smith & Wasshausen

Plate 4.



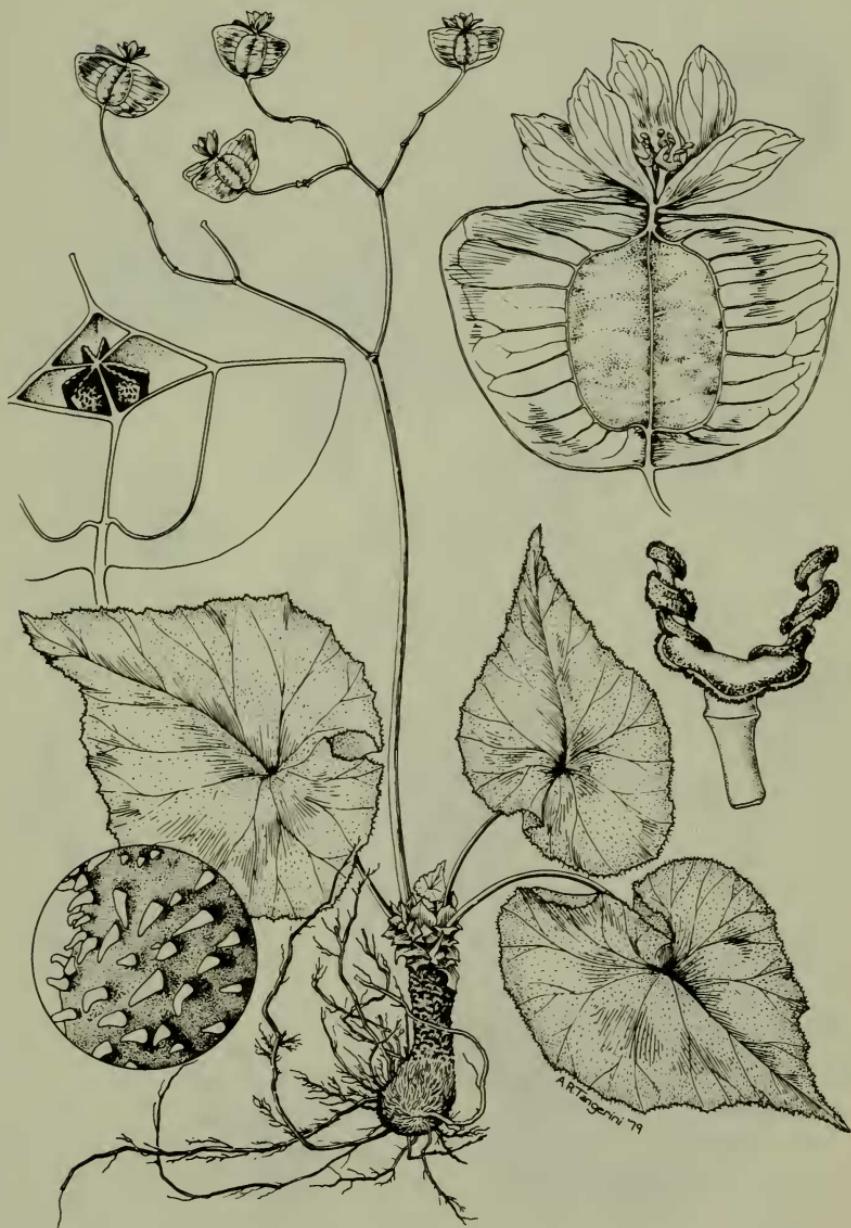
Begonia geminiflora L. B. Smith & Wasshausen

## Plate 5.



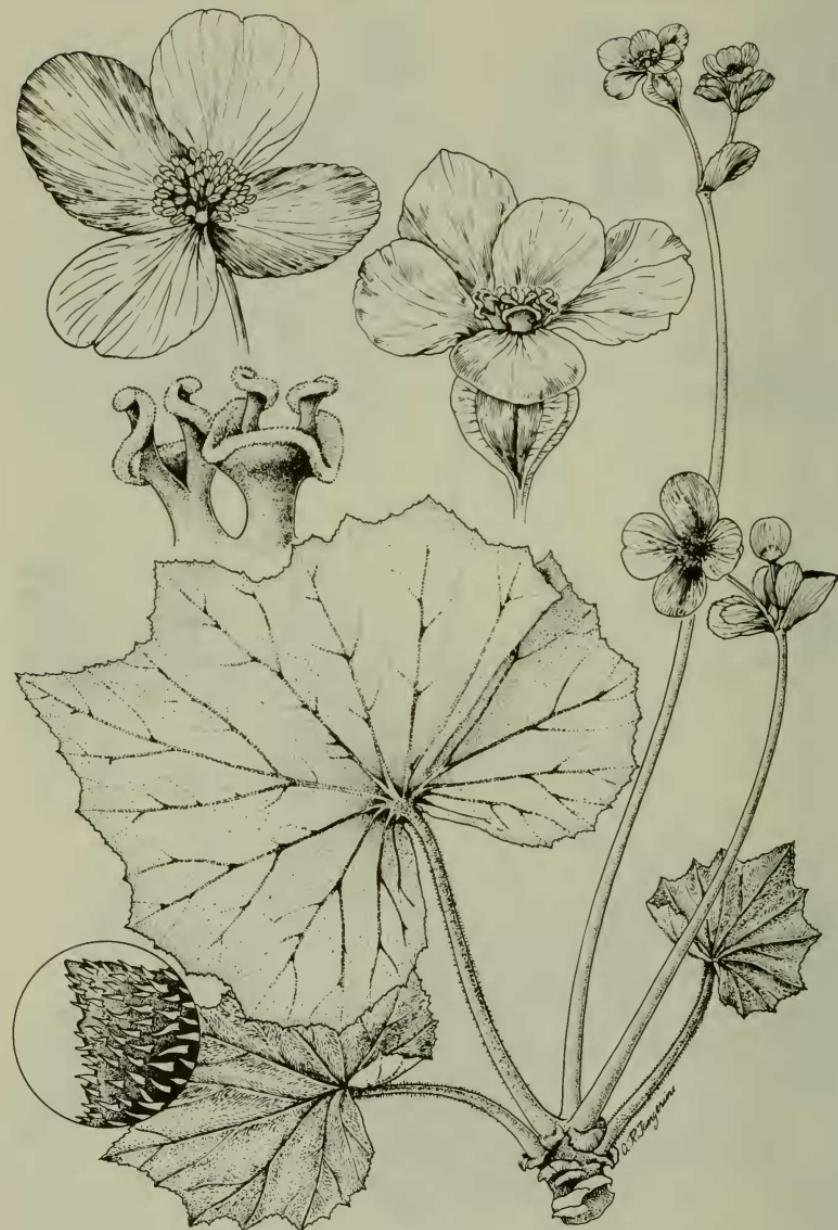
*Begonia compacticaulis* Irmscher

Plate 6.



*Begonia asympeltata* L. B. Smith & Wasshausen

## Plate 7.



*Begonia xerophyta* L. B. Smith & Wasshausen

## Plate 8.



*Begonia sparreana* L. B. Smith & Wasshausen

## Plate 9.



*Begonia harlingii* L. B. Smith & Wasshausen